

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Engineering Multi-Cellular Living Systems - RESCHEDULING IN PROGRESS (Q3)

Scientific Organizers: Roger D. Kamm, Nuria Montserrat Pulido and Jianping Fu

Supported by the Directors' Fund

Organoids as Tools for Fundamental Discovery and Translation - RESCHEDULING IN PROGRESS (Q4)

Scientific Organizers: Jason R. Spence, Melissa Little and Barbara Treutlein

February 7-11, 2021 • Keystone Resort • Keystone, CO, USA

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Scholarship Deadline: October 27, 2020 / Abstract Deadline: November 10, 2020 / Discounted Registration Deadline: December 8, 2020

SUNDAY, FEBRUARY 7

Arrival and Registration

MONDAY, FEBRUARY 8

Welcome and Keynote Session (Joint)

Paola Arlotta, Harvard University, USA
Programming, Reprogramming and Modeling of the Mammalian Cerebral Cortex

Matthias Lutolf, EPF Lausanne, Switzerland
Engineering Epithelial Organoid Development

Embryoids and Gastruloids for Early Development (Joint)

Jianping Fu, University of Michigan, Ann Arbor, USA
Building Synthetic Human Embryo-Like Structures

Magdalena D. Zernicka-Goetz, Caltech and University of Cambridge, UK
Development of Cell Lineages and Patterning in the Early Mammalian Embryo

Alfonso Martinez Arias, University of Cambridge, UK
Gastruloids: A PSC Based Model for Mammalian Gastrulation and Body Plan Engineering

Short Talks Chosen from Abstracts

Advanced Technologies for Engineering Multi-Cellular Living Systems: Computation (Q3)

Yoshihiro Morishita, RIKEN, Japan
Quantitative Imaging and Geometrical Analysis of Organ Morphogenetic Processes

Melissa L. Kemp, Georgia Institute of Technology, USA
Modeling Self-Organization in Multi-Cellular Engineered Living Systems

Elebeoba E. May, University of Houston, USA
Predictive Modeling to Enable Prescriptive Design and Programmability

Short Talks Chosen from Abstracts

High Content Screening with Organoids (Q4)

Prisca Liberali, Friedrich Miescher Institute for Biomedical Research, Switzerland
Regenerative Landscape of Intestinal Organoids

Nancy L. Allbritton, University of Washington, USA
Gut Physiology in 2D and 3D Engineered Systems

Samira Musah, Duke University, USA
Human Podocytes on a Chip for Disease Modeling

Short Talks Chosen from Abstracts

Poster Session 1

TUESDAY, FEBRUARY 9

Microphysiological Systems and Drug Discovery Platforms (Q3)

Roger D. Kamm, Massachusetts Institute of Technology, USA
Microphysiological Models for Neurological Disease

Sandra J. Engle, Biogen, USA
In vitro Models to Enable Drug Discovery

Danilo A. Tagle, NCATS, National Institutes of Health, USA
Tissue Chips for Drug Screening

Sylvia F. Boj, Hubrecht Organoid Technology, Netherlands
Patient-Derived Organoids for Drug Development and Screening

Short Talks Chosen from Abstracts

Increasing Complexity in Organoids by Leveraging Development (Q4)

Giorgia Quadrato, University of Southern California, USC Stem Cell, USA

Modeling Human Brain Development and Disease at Single Cell Resolution with Brain Organoids

Jason R. Spence, University of Michigan Health System, USA
Complex Cell-Cell Interactions in the Developing Human Lung and Gut

Barbara Treutlein, ETH Zürich, Switzerland
Single Cell Genomics to Guide Human Stem Cell and Tissue Engineering

Madeline Lancaster, Medical Research Council Laboratory of Molecular Biology, UK
Using Brain Organoids to Identify Conserved or Unique Factors in Human Brain Size Evolution

Short Talks Chosen from Abstracts

Biohybrid Systems and Biological Robotics (Q3)

Christine L. Mummery, Leiden University Medical Center, Netherlands

Biophysical Techniques for Characterization and Functional Analysis of Cardiovascular Cells

Kevin Kit Parker, Harvard University, USA
Building a Heart

Rashid Bashir, University of Illinois, USA
3D Printed Cellular Machines for Engineering and Biology

Short Talks Chosen from Abstracts

Organoids for Drug Discovery and Precision Medicine (Q4)

Speaker to be Announced

Lorna Ewart, Veroli Consulting, UK
Next Generation in vitro Systems for Drug Discovery

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Shuibing Chen, Weill Cornell Medical College, USA
A Multiplex Organoid Platform for Pancreatic Cancer Drug Discovery

Short Talks Chosen from Abstracts

Poster Session 2

WEDNESDAY, FEBRUARY 10

Advanced Technologies for Engineering Multi-Cellular Living Systems: Imaging, Biomaterials, and 3D Printing (Q3)

Speaker to be Announced

Adam W. Feinberg, Carnegie Mellon University, USA
3D Bioprinting of Collagen to Rebuild Components of the Human Heart

Anjelica L. Gonzalez, Yale University, USA
Development of Biomaterials for Use As Investigational Tools

Claire G. Jeong, insitro, USA
Talk Title to be Announced

Short Talks Chosen from Abstracts

Organoids for Disease Modeling (Q4)

Meritxell Huch, University of Cambridge / Max Planck Institute of Molecular Cell Biology and Genetics, UK
Liver Organoids for Human Biology and Disease

Reiner Alois Wimmer, Institute of Molecular Biotechnology Austria, Austria
Human Blood Vessel Organoids as a Models of Vasculopathies

Mina Gouti, Max-Delbrück Center for Molecular Medicine, Germany
Neuromuscular Organoids to Model Human Development and Disease

Anna Greka, Harvard Medical School, USA
Modeling Genetic Diseases in Human Kidney Organoids

Short Talks Chosen from Abstracts

Bioengineering Ethics (Joint)

Insoo Hyun, Case Western Reserve University, USA
Bioengineering Ethics in Organoids

Megan Munsie, University of Melbourne, Australia
Ethical, Legal and Social Implications of Stem Cell Research

Jeremy Sugarman, Johns Hopkins University, USA
Ethics in Organoid Transnational Research

Short Talks Chosen from Abstracts

Poster Session 3

THURSDAY, FEBRUARY 11

Bioengineering of Organoids (Joint)

Nuria Montserrat Pulido, Institute for Bioengineering of Catalonia, Spain
Engineering Solutions for Pluripotent Stem Cell Derived Kidney Organoids

Jennifer A. Lewis, Harvard University, SEAS, USA
Vascularization of Organoids

Todd C. McDevitt, Gladstone Institutes, USA
Engineering Stem Cell Technologies

Melissa Little, Murdoch Children's Research Institute, Australia
Bioengineering Kidney Organoids

Short Talks Chosen from Abstracts

Engineering Principles of Developmental Biology and Regeneration (Q3)

Michael Levin, Tufts University, USA
Pattern Formation and Biological Information Storage During Embryogenesis

Vikas Trivedi, European Molecular Biology Laboratory, Spain
Talk Title to be Announced

Stefano De Renzis, European Molecular Biology Laboratory, EMBL, Germany
Optogenetic-Guided Tissue Morphogenesis

Short Talks Chosen from Abstracts

Improvements in Organoid Maturation (Q4)

J. Gray Camp, Institute of Molecular and Clinical Ophthalmology Basel, Switzerland
Interrogating Evolution using Single Cell Genomics and Genome Engineering

James M. Wells, Cincinnati Children's Hospital Research Foundation, USA
Organoids to Model Human Development and Disease

James Hudson, QIMR Berghofer Medical Research Institute, Australia
Guiding the Form and Function of Human Cardiac Organoids

Short Talks Chosen from Abstracts

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q3)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q4)

FRIDAY, FEBRUARY 12

Departure